NON LOQUI 1967

Contents

NON LOQUI—1967

OFFICIAL JOURNAL OF THE UNIVERSITY ENGINEERS CLUB
UNIVERSITY OF W.A.

EDITOR, ADVERTISING, PUBLICATION
Dan McCarthy

MISS ENGINEERING, 1967

Roslyn Clarke

COMMITTEE 1967

Back (left to right): Les Hoffman, Rufus Grieve, Jeff Crow, Corbett Poyton, Graham Gaunt.
Front (left to right): Cary Nathan, Geoff Leivers (Treas.), Mac Ngan Boon (V. Pres.), Ted Pritchard (Pres.), Ian Morrison (Sec.), Jim Wall (Ass. Sec.).

Editorial

THE SILENT LESSONS

An engineer, is an engineer, is an engineer.

Can we, having paraphrased Gertrude Stein's famous non-saying, rationalize it like she did by saying that "an engineer" is a sufficiently singular concept that it needs no qualification? Sadly the answer is no, a quiet, little, gentle no. It is no from professors to practising engineers to first year undergraduates, from doctors, lawyers, scientists, from girls, wives and grandmothers, no! Why?

Is it because in the entrance to the Arts School they have "Know Thyself" rather skilfully camouflaged on the wall, whereas we possess a colourfully unintelligible and intriguing mosaic staring balefully across at a smug list of who's who in the Engineering Faculty, complete with coded room numbers? Is it diagnostic that the sign in the library says "Silent Please", that the decor in those long, lonely tunnels, like the rest of the building, is uniformly grey (excepting the doors of the ladies' toilets); that the staircase outside the common room leads up to nowhere; that the fans in the lecture rooms are too noisy to use; that there is writing on a blackboard in the second year Mech. Lab., that was there five years ago?

These are the peculiarities, the individualists of the Engineering School where every West Australian engineer begins his private search for an engineering identity. Do grey corridors direct him to dispose of imagination and should he respect time on account of the immutability of the blackboard in the Mech. Lab.? Can he desert the laws of grammar with the same stern disregard as the library sign and will his frivolities be smiled upon if in some light-hearted moments he incorporates a few unconnected transistors in his design? It is more than a little confusing.

Every summer of course, there is the annual skip-round the premises of some benign or predatory company where one learns not to take tea with the tradesmen and that the managing director's name is Chollomley and he's "terribly pleased" to have you working there for the vac. And although the technical aspect is grand and we return adept at crossbar installation, gravel-pit stabilisation or steam turbine maintenance, identity-wise the return is disturbingly low. It is disturbing because whereas on campus we may shrug shoulders and peer at long haired arts students, we need behave with far more intelligence and decorum when presented with ten or twenty men of varying ages and levels of antagonism whom we have to co-ordinate and direct. Here we needs must know who and what we are.

This then is what we find and will we be blamed if our vision like our conclusion is misty?

President's Report

Dear Members,

Traditionally it is the retiring President's privilege to review the year's activities, and in retrospect give a short and concise summary.

On looking back at 1967 a number of points come immediately to mind.

Firstly symposium—this was the highlight of the year, and for many of us probably the highlight of our University careers. Superbly organised, there can be no doubt that E.B.S. '67 rates as one of the best ever held. The organisers, the Committee, and the Club can feel justly proud for it was a truly magnificent effort.

On the sporting fields the Club closely contested the Goyder Cup, and was a little unlucky in not recapturing it. Excellent performances were achieved in all events, with both Rugby and Hockey teams finishing undefeated. Clearly there is still a gap to be covered, but one well within reach if all Engineers apply themselves. A most heartening performance.

'67 also saw the end of an era with the last group on the 5 year course graduating. For many it is a nostalgic moment, because it represents the final break from the old Shenton House traditions. With the new system comes new problems and new pressures. If the Club is to retain its entity and its strength good leadership, good spirit and 100 per cent member participation is required.

The Club has a long and proud heritage and it would be tragic to see this lost.

Finally I would like to take this opportunity of wishing you all the best for the future, and look forward to meeting you again as Engineers.

Yours sincerely,

E. D. PRITCHARD,

President, 1967.

OBITUARY

DR. GEORGE HONDROS, B.E., Ph.D. (W. Aust.),

M.I.E.Aust., F.A.S.C.E., M.A.C.I.

The death of Dr. Hondros on the 15th October, 1966, is a sad loss to both the Engineering Department at the University and the Engineering profession. Born in Greece, he received his secondary education at Perth Modern School and graduated as Bachelor of Engineering in Civil Engineering at this University in 1942. He worked with the Department of Supply before joining the staff of this University in 1946. His interests in study and lecturing lay in the field of structural analysis, concrete and soil mechanics. He obtained his Doctor of Philosophy Degree in 1962. Dr. Hondros was highly respected by all the students who knew him and his loss will be felt by them for many years.

Radio Astronomy

by Graham Abbey

"Look at the stars! Look, look up at the stars!
And see all the fire-folk sitting in the air".

History

Astronomy is one of the oldest of the sciences, dating back to the time when man first made records of the stars. Radio astronomy, on the other hand, is one of the youngest sciences, the first successful observation of radio waves, coming from outside the earth, being made in 1932. In that year Karl Jansky, an American communications engineer made observations of a steady hiss type of static coming from the Milky Way.

Little notice was taken of this until 1937 when Grote Reber, an American radio amateur, constructed a large paraboloid antenna. He used this with sensitive receiving equipment and made many observations of these cosmic radio waves.

The Second World War halted all progress in this field. However, many radar physicists and scientists were trained during the war and, when hostilities ceased, some turned to radio astronomy. This led to rapid progress from 1945 onwards especially in England and Australia where large radio telescopes were built.

At the present time the techniques of radio astronomy are well developed. Engineers from many different branches have played an important part in developing the large radio telescopes, such as those at Jodrell Bank in England and Parkes in Australia.

Some of the engineering problems which have been solved were extremely difficult. It has been required to design structures with stable foundations and capable of supporting large movable paraboloid antennas up to 250 ft. in diameter and weighing hundreds of tons. This antenna has to be as light as possible, yet extremely rigid and capable of being pointed precisely in a given direction. It has also to be a good reflector of radio waves and able to collect them efficiently for, after travelling through space for distances of even thousands of millions of miles the waves are extremely weak.

Electrical engineers and physicists have worked together to develop the sensitive receivers used in conjunction with the large antennas. These receivers are capable of extremely high amplification and yet have a very low intrinsic noise level.

To explain how the radio waves are generated in space it is necessary to go back to some elementary physics. Basically three sources of radio waves are of interest.

(1) The thermal noise caused by thermal agitation of all solids at temperatures above absolute zero. These waves are generated mainly by solid bodies such as the sun and planets, galaxies, etc.
(2) Radio waves may be produced when free electrons, moving in outer space, are influenced by a fluctuating magnetic field, thus accelerating the electrons to high velocities and causing them to emit radiation.
(3) Just as ionized hydrogen emits characteristic spectral lines (such as the Balmer series) so too it may emit characteristic radio frequencies. The most common is at 1420.4 mcs and is known as the hydrogen line to astronomers. Hydrogen gas exists in enormous clouds in space so this radiation is reasonably easy to detect.

By working in close collaboration with optical astronomers radio astronomers have given us much information about the universe in which we live. However, much work remains to be done, especially in the fields of cosmology and cosmogony.

Although some astronomers are sceptical it is thought that, with improved radio telescopes, it will be possible to receive radio waves generated at the time the universe is thought to have been created (about 10,000 million years ago). This will, when analysed, give us information of the temperatures and possibly the energies involved and help to decide between the three main rival theories of cosmology. Briefly these

are the Big Bang, Oscillating Universe and Steady State theories.

The Big Bang theory postulates a cataclysmic explosion of a relatively small amount of superdense material. After exploding, the material formed the stars, planets, dust, etc. which fill space in all directions and which are moving away from the centre of the explosion.

The Oscillating Universe theory says that matter has always existed but that it is in a state of perpetual motion. After exploding the matter moves away but slows down eventually, falls back to the centre, explodes again, etc., with a cycle of about 10,000 million years. One astronomer calculated that we have only about 80 billion years left to go before the next explosion!

Finally the Steady State theory suggests that although the components of the universe are rushing away at a great rate, hydrogen, the building block of the universe is continually being formed and so that total mass-energy of the universe is constant. So far no one theory explains all the facts.

Of great interest in connection with these theories is the study of quasars. Quasars, as far as is known, are large regions of space containing matter at extremely high temperature and pressure. A typical quasar may be 20×10^{12} miles in diameter and may be moving through space at a velocity of 0.8 times the velocity if light. Although located close to the limits of detection of present radio telescopes their enormous power output of about 10^{38} watts is sufficient to make quasars relatively easy to detect. This power output may be vaguely conceived if we realise that the radio energy alone radiated by an average quasar in one microsecond is sufficient to supply all the world's electric power requirements at a million times the present rate for the next ten million years.

Some radio astronomers think that quasars are the remnants of the explosion mentioned in the Big Bang and Oscillating Universe theories; hence their interest.

Radio Astronomy is essentially pure science, i.e. knowledge for knowledge sake only is to be gained but many practical applications have been found for some of the equipment developed. This is especially notable in the field of communication engineering where a free interchange of equipment advances can benefit both communication engineers and radio astronomers.

Ref. Kraus, J. D. Radio Astronomy.

☆ ☆ ☆

THE LETTER

Dear Sir,

I was down your road last week and I seen a hell of a lot of rabbits on them mine tailings behind your house and no work going on to keep them down the neighbours tell me that you was down in the pub and that you was drunk for four days last Christmas and you haven't done a damn thing about them rabbits since last time I stirred you up they tell me you are saving them up so as to have a few bob to go to the Show and probly get drunk again for another four days.

Now THEREFORE TAKE NOTICE that me being an Inspector under the said Act hereto require you to forewith and commence rabbit destruction work immediately in default of which you'll do jail which will probly be a bloody good thing as far as you are concerned.

This is the last bloody warning your getting.

Yours etc.

Strange People

by Peter McGuire

The innumerable instances of unexplained and inexplicable experiences which have befallen credible witnesses serve to emphasise the limitations of our understanding the laws which govern the world about us.

The following are just a drop in an ocean of the evidence available and they tend to substantiate the words of Thomas Wolfe who said:

"Beneath the tides of sleep and time
Strange fish are moving".

As we all know, the brain is the seat of our consciousness. So delicate is the brain that it is protected by a heavy armour of bone. Damage the brain and life loses its meaning in direct proportion for it cannot be regenerated or repaired.

A noted German brain specialist, Dr. Heifeland, who thought along these lines, may have had to review some of his ideas when he performed an autopsy on the body of a paralysed man who had been in complete control of his faculties to the last. Instead of a brain he had 11 ounces of water!

It is also common knowledge that the brain accumulates no metabolic debts and thus must be supplied continuously with oxygen and glucose. Sleep also, so medical students are told, is food for the brain. Starve the brain of one of these and it will digest itself irreparably. Perhaps the medical students should revise their ideas.

In August 1961 Eustace Bennett was 81 years old. He was a retired farmer living near Leicester, England. There was little to distinguish him from any other retired farmer of that community, except for the fact that Eustace never slept. When he was 27 he lost the desire for sleep and in the ensuing 54 years he spent his nights reading books, listening to radio and working crossword puzzles while the rest of the family got their rest.

Of course the sceptic medics experimented with the various means which normally induce sleep—butt hey were just wasting their time—hypnotism didn't even make him drowsy. When the medics left Mr. Eustace Bennett went back to his normal routine—6 hours in bed each night to rest his body, while his mind was on duty, fully alert and active. Truly he can say—"Last year I never slept a wink".

No less baffling is the strange paths nature resorts to in the degree of development of the brain's capabilities.

George Bidder (1806-1878) was probably the best known of British boy wonders. He was the son of a poverty-stricken stone cutter, when he showed his amazing talent for calculating at the age of 6. His father promptly took him on a tour, a venture from which he was rescued by admirers who recognised the value of his talents. George was sent to Edinburgh University where at the age of 16 won the mathematics prize.

When he was 12, a group of professors asked him for the answer to this problem. If a pendulum swings $9\frac{3}{4}$ inches in one second how many inches will it swing in 7 years, 14 days, 2 hours, 1 minute and 56 seconds—counting each year as 365 days, 5 hours, 40 minutes and 56 seconds? In less than one minute George supplied the answer—2,165,625,744$\frac{3}{4}$ inches. The professors asked him how he got the answer so rapidly and George replied—"Well sir, you said the years were all the same length so I figured it out for one year and multiplied by 7. Then I figured it out for the months, days, hours, minutes and seconds. It was rather easy that way."

Easy?—perhaps if you had a mind like George Bidder, who went on from being a boy wonder in mathematics to one of the world's greatest civil engineers, for whom the Victoria Docks still stand as a memorial after his feats of mental calculation have been largely forgotten.

The genius of George Bidder is often illustrated in a completely different set of circumstances. You have often heard it said that the line of distinction between genius and idiocy is a very thin one. I propose to show you that the line is sometimes non-existent—that the two extremes can exist in the same mind.

M. Fleury was the child of syphilitic parents.

He was born blind and feeble minded. Abandoned at a very early age he became an inmate of an institution in Armentieres from where it was soon noticed that he had a marked flair for mental arithmetic. Attempts to teach him the common decencies of life were fruitless; Fluery could grasp little of what was explained to him. Stooped, shuffling of gait, bleary eyed and harmless he spent his life fumbling his way around the grounds and halls of the institution which was the only home he ever had.

But there were times when Fleury stepped out of his cocoon of idiocy to astound scientists. Those were the occasions when learned men assembled to test his ability as a lightning calculator; times when they went away wiser but much more baffled, for Fleury could perform feats of calculation with a speed and accuracy that defied explanation.

Once, before a group of 12 of Europe's top scholars and mathematicians, Fleury was brought into the room for an exhibition of his incredible talents. He leaned against the wall simpering, embarrassed at being in the presence of strangers. His attendant read to him the question which the scientists had propounded: "If you have 64 boxes and you place one grain of corn in the first box and twice as much in each succeeding box (i.e. twice as much as the box it follows) how many grains of corn are needed to fill the requirements?" Fleury continued to giggle and hide his face from the professors. His attendant asked if he understood the question. Yes, he did. Did he know the answer? Yes, he did. In less than half a minute he had calculated the correct figure—

18,446,734,073,709,551,615.

Fleury the idiot of Armentieres was called upon to perform similar feats for astronomers, architects, bankers, tax collectors and ship builders. Each time this pitiable creature who spent all his life in an insane asylum produced the correct answer in a matter of seconds—a performance which could not be duplicated until the advent of electronic calculators decades after his death.

PETER McGUIRE,
3rd Year Civil.

☆ ☆ ☆

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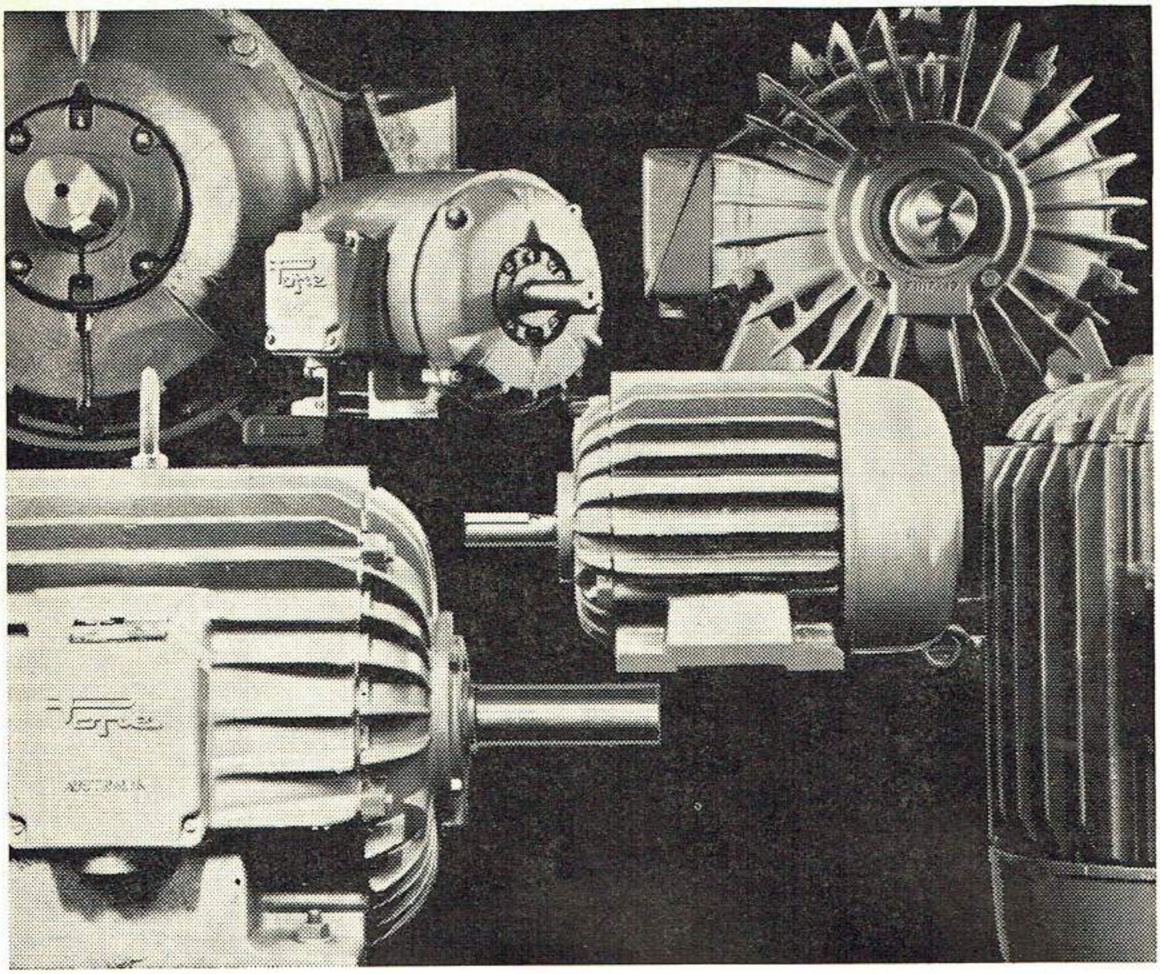
—W.G.C.



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Beginning Not End

The student said to the tradesman old,
At work with his head bent low,
"You've been here for many years I'm told?"
The man glanced up, "That is so".

"Then tell me sir, of an engineer
Of his trade, of wheels that turn,
For there's much that interests me here,
I'm young and willing to learn."

The old man straightened, looked hard awhile,
In the eyes of the young man before him,
And he wondered and fingered the teeth of his file,
Will he listen, or shall I just bore him?

But the student stared back at the engineer,
He had asked and waited an answer;
"How long shall I talk, how long will you hear?"
"Oh I'm trained to attend for an hour, sir."

The old man smiled a wise old smile,
And he spoke but his tone was sour.
"Do you think young man, you could use this file?
It would take much more than an hour."

"No doubt you can solve an equation,
First order and second degree,
Or derive a theoretic relation
Twixt load and deflection and E.

'"You know just a few of the hows and whys,
Principles, reasons, and laws,
I've learnt what I know with my eyes,
'And I've kept a tight clamp on my jaws.

"I can't tell you much about stresses,
But I'll show you the tricks of my trade,
I'd teach you how not to make messes,
To do things for which you're not paid.

"Though I'm old, and my hands aren't so steady,
Eyes dim, and body not strong,
My heart is still there, and I'm ready
To do what I can for as long.

"I can sharpen a tool, I can make up a jig,
I can put a keen edge on a drill,
I can chip out a three-inch key-way,
As quick as it's cut on a mill.

"There's a place for me yet, there's a job I can do,
For I know just the where and the when,
I can set up a lathe, I can turn a part true,
In less time than two other men.

"An engineer's life is not easy,
I've been learning since I was fourteen,
I've been dirty and sweaty and greasy,
Been worried right out of my skin.

"For we're not like doctors and lawyers,
What we do doesn't pay if it's wrong,
And though people may buy if they like it,
They want it for less than a song."

The old man stopped, and the student said,
"There is much indeed I can learn,
But where is the place for the things I've read?
Where is my labour's return?"

"You must place what you know, powder-like in a die,
And mould from it what you require;
Heat it, compress it, extrude all the waste,
And use it for what you desire.

For you have the greatest advantage, youth;
I can do what I know, no more;
You have plastic ideas, which formed into truth,
Shall advance further on than before."

The student passed on, head bowed, thinking,
A wiser and humbler man,
Slowly he went, and he thought "When I'm through,
I'll keep learning wherever I can."

H.P.S.

1955 Sydney Year Book (Eng.)

Extract from

Quality Controllers Bible

by Mark Want

There dwelt in the city of Syndal a young graduate. And his chief spoke unto him saying:

"Lo there is in the wilderness of Perth a maker of bolts, and he hath made two score and five special bolts. These be super-dooper bolts and great is the tensile strength thereof, that they fix the top of a cylinder casing even unto the bottom.

Get thee hence and inspect them. And take micrometers and things, that thou shalt gauge them unto the wideness of the wing of a gnat. For I say unto thee, if thou shalt release them and they be found wanting, then I wilt tear a strip off thee. Yea, if the bolts be not properly inspected, then shall I cause a great misfortune to fall upon thee".

And the young graduate, who was a sound bloke, spake thus: "Verily I say O chief, that which is asked for by drawing and specification shall be done." And then he departed and journeyed to the maker of the bolts, who spake unto him saying:

"Here they are Charlie; want a sixinchrool?"

But the inspector chided him saying:

"Before I measure them, command your servants and your hand maidens, that they may deliver unto me all the paper work hereunto."

Then there were carried unto him one hundred and fifty nine scrolls, which were the release notes and test certificates of the raw materials and of the fiery furnace in which they did heat-treat the bolts, and of the calibration charts of the hardness machines in which they did test the bolts and the host of certificates for the accuracy of the tensile and Izod machines, in which they did stretch and smite the test pieces. And there was also brought unto him a dog licence, a copy of the Factory Act and a lottery ticket which were included among the papers in error.

There were also certificates of Chemical Analysis, Radiological reports, Inspection records and many other reports of strange and wonderful things of which none knew the meaning. And they brought a copy of the order and a set of drawings and a Pyrometer record chart which was fifty cubits in length, and a multitude of other things too numerous to recount.

For twelve days the graduate looked upon these things and on the twelfth day he said they were good. Then he did measure the bolts and all the dimensions thereof. And he put them in strange potions and tested them upon a machine of Magnaflux. And he performed Rockwells upon them all, and some he rubbed with a precious jewel. Then he cast his eye upon them through a microscope, a horoscope, a telescope, a periscope, a stroboscope and other strange devices. And he did project the threads upon a screen and gazed upon their form, and it was fair. And he gauged the threads by the law of GO and NO GO, and by the law of best cylinders. And from one bolt which was doubtful, he did cause a test piece to be made and great was the tensile strength thereof; and the Izod and Charpy were fair to behold. Then he caused X-rays to shine upon them lest there be concealed cavities inside them.

These things, and many others which are in the Sacred Book, did he perform with great cunning. And when all these things had come to pass, it was the evening of the nineteenth day, and he made out a release note and inscribed therein all the necessary details. And he signed it and put his stamp upon the bolts also. Then he spake unto the bolt-maker saying:

"I do declare this batch of bolts to be good, and if they bounce, then shall I perform a certain act in the reflection pond."

BUT LO. It came to pass that the bolts were rejected. They had been fashioned to an obsolete issue of the drawing. And the grief of the graduate was terrible to behold.

F. M. O. WANT,

4th Year, Mech.

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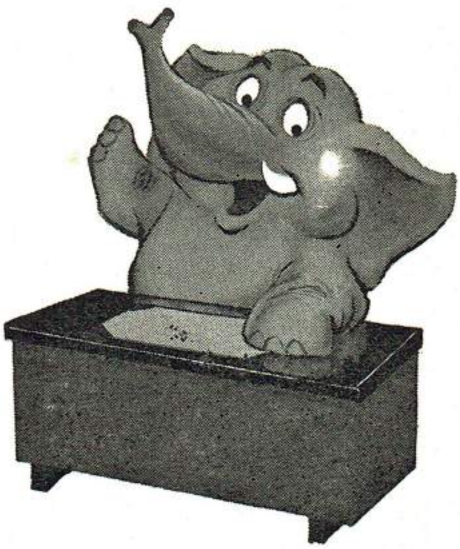

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BANK COMMONWEALTH

In Search of the Hyppy Pelikaan

by Tom Flintoff

The 1966 fourth year had been wrapped up and the knot tied with a few afternoons at Steve's.

Twenty of the strong silent men stood on the platform of Perth Railway Station laden down with a vast amount of baggage, a great proportion of which comprised of mysterious, unlabelled, oblong, brown paper parcels which rattled each time they were shifted. Wives and sweethearts were farewelled and the train pulled out.

The hunt for that mysterious bird, the Hyppy Pelikaan, was on. A scouting exercise was launched at once and reconnoitre was made at eight the next morning in a sorrowful scene on the Kalgoorlie Station. A scant "continental" breakfast did nothing to help.

No further contact was made on the trip across the desert, although Pete was seen examining some fresh tracks with interest. Slightly discouraged, the party turned to seeking the mystic Mugga, that elusive creature that had evaded many previous expeditions. A midnight sortie into the desert at Cook was organised but the results were poor.

A new and far greater problem presented itself at Whyalla. Nobody could drink the grog. The camp was in turmoil. Several of the party weakened and in desperation turned to Cinzano. However, the invaluable local knowledge of Nathan came to the rescue and he produced a fiery brew that drew immediate acclaim. Armed afresh, the party proceeded to set up South Australia's first beer garden (bath plugs and all). Lighting was provided by lights flashing on and off at frequent intervals from the windows above, a feature which became more frequent as the night went on.

Adelaide's archaic regulations proved a great inconvenience although, with some ingenuity, the problem was overcome with the help of a friendly publican. The "Order of the Hyppy Pelikaan" had by now been officially established and was dearly sought after by all. The search was in full swing but again proved unfruitful. The terrain was definitely unsuitable and the absence of the essential watering holes made conditions difficult. A few rather thin specimens were momentarily sighted but they fled in terror when approached.

The least said about Melbourne on Sunday without transport the better.

We hit Sydney full of expectations and, as expected, got full. It was not long before the party discovered that this was definitely Hyppy Pelikaan country. Successful captures were made but caution was essential in the difficult terrain. A notable feature was the deep gutters located at frequent intervals, a hazard which had to be negotiated with great care. At least one great white hunter fell foul of a particularly nasty one and had to be extricated under difficult circumstances. Despite these minor setbacks, King's Cross and Mascot are hereby recommended as particularly lush pastures where the Hyppy Pelikaan abounds. It was with great sorrow that we left this Utopia.

Here we embarked on a two-day bus ride to Parkes and then Canberra. The strain of the continual pressure was beginning to take effect and several members cracked. McCarthy, in particular, came out with fists raised and the punchups started. Control was gained with the institution of the "Order of the Box". This was awarded to the man who made a comment worth points (either positive or negative) and coronations were performed at least every five minutes. At this stage, J.J. was busy trying to make up a lot of lost ground from the many negative points chalked up earlier on. However, he wearied at the insurmountable task ahead, stopped to rest and flaked. This was a dangerous dabble in vice. Pleasant—but alas—he was hooked. The situation deteriorated. He was flaking everywhere—standing up, sitting down,

walking around. A new and definitely coveted award went out—"King Flaker". This was never wrested from his grasp for the rest of the tour.

We entered Monaro country, but the only Monaros seen were topographical. It was decided to forsake all idea of the Hyppy Pelikaan for several days as we ascended into the Snowys. Here, a new world of midnight Test Matches, acrobatic table tennis and rock throwing unfurled. Intense preparation for that historic ritual, the Geehi Guzzle was commenced. The stage was set for a record breaking performance and the onlookers were not disappointed.

Congratulations must go out to the small but steady team of Mechanicals, who scraped in by a quarter of a can from the Civils and the Electricals, despite some great individual performances by several members of the latter teams. A notable performance was put up by Des Harvey who in a supreme, last minute rush against time broke the long-standing Gledden Tour record. Some more colourful and spectacular performances followed the completion of the contest and in some cases lasted well into the night. However, our basic training held us in good stead and all but one member fronted up to breakfast, to the great amazement of the Geehi Hostel superintendent who had purposely under-catered for the occasion. The heavy pace had left its mark on Ken, who paid a visit to the Albury Hospital with an over-bloodshot eye.

A day for recovery, then back into Hyppy Pelikaan country. This time Melbourne, with great assistance from Mac and Nathan turned on a really good hunt. While in the Snowys, the party had acquired an invaluable aid for the hunting of these creatures—the strains of the air "Snowy River Roll". The chanting of this brought the Hyppy Pelikaan out in flocks. Many good renditions were performed with success, that is on the part of all except McCarthy, who on deciding that the song wasn't Irish, locked himself in Mick's room for several hours, removed the door hinges and devoured the entire plentiful supply of cans within, all the while shouting down the Orangemen without, who were trying, with the help of numerous keys and the night staff of the hotel, to gain entrance.

After an all but too short stay in this fair city, the party reluctantly left the land of the Hyppy Pelikaan and headed back to the land of another feathered friend—the Black Swan. In the anti-climax of the trip King Flaker was no longer secure on his throne and many good attempts to topple him occurred. However, he remained secure and it was with sorrow in our hearts and stomachs that the party arrived back at the Perth Railway Station.

These halcyon days have left us but the party often meets at Steve's on a Friday night to recall the events that took place, and to toast the memory of Mr. and Mrs. Gledden who hit on the right incentive to make Engineering students work for the first few years at Uni.—The Gledden Tour.

☆ ☆ ☆

"THE WONDERFUL LOVE"

The wonderful love of a beautiful maid,
The love of a staunch true man,
The love of a baby unafraid,
Have existed since time began.
But the greatest of loves, the love of loves,
Even greater than that of a mother,
Is the tender, passionate, infinite love
Of one drunken sod for another.

G. Drew.

REVOLUTION or EVOLUTION?

Containerisation of cargoes has been described as a transportation "revolution" even though containers have been in use for quite a few years. Really speaking, the "revolution" stems from the remarkable handling equipment being developed to cater for what can be termed the "containerised-era".

Australia is not lagging behind in this field of development. In fact, a West Australian engineering Company—Vickers Hoskins Pty. Limited of Bassendean—have already gained considerable experience by having built the unique cranes aboard m.v. "Kooringa". This year the Company won, against world-wide competition, a contract to construct eleven huge landbased container-handling cranes to be installed at major mainland ports around Australia.

The contract covers four "Portainer" gantry-type cranes for dockside use and seven overhead travelling cranes for terminal storage areas.

The "Portainers" will be the largest of their type in the world, each capable of lifting 45 tons and having a deadweight of about 500 tons.

Huge, tower-like structures, they will be fitted with a 130 ft. long boom which swings down over the container-carrying ships to permit the unloading and reloading of containers at a very fast rate.

Equipped with very sophisticated electrical systems and "fail-safe" safety features, all operations of each crane will be under the control of one operator.

Though basically of American design, the cranes will contain design features developed locally by Vickers Hoskins. These are especially relative to the hoisting mechanisms and the patented "lifting-spreader" device which will permit two 20 ton containers to be handled at the one time—another world-wide "first".

The fact that Vickers Hoskins of Bassendean won this contract against world-wide competition is certainly indicative of the progress and ability of local engineering.

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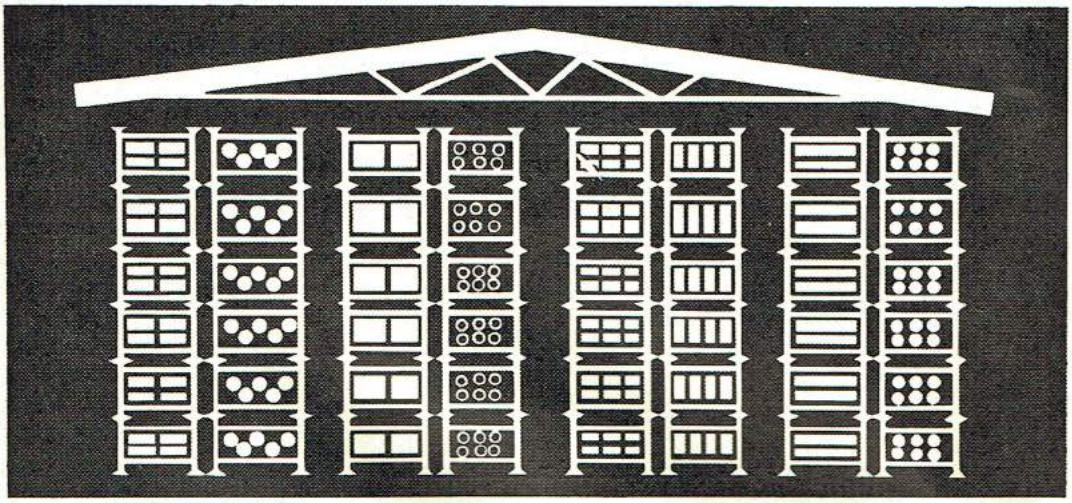

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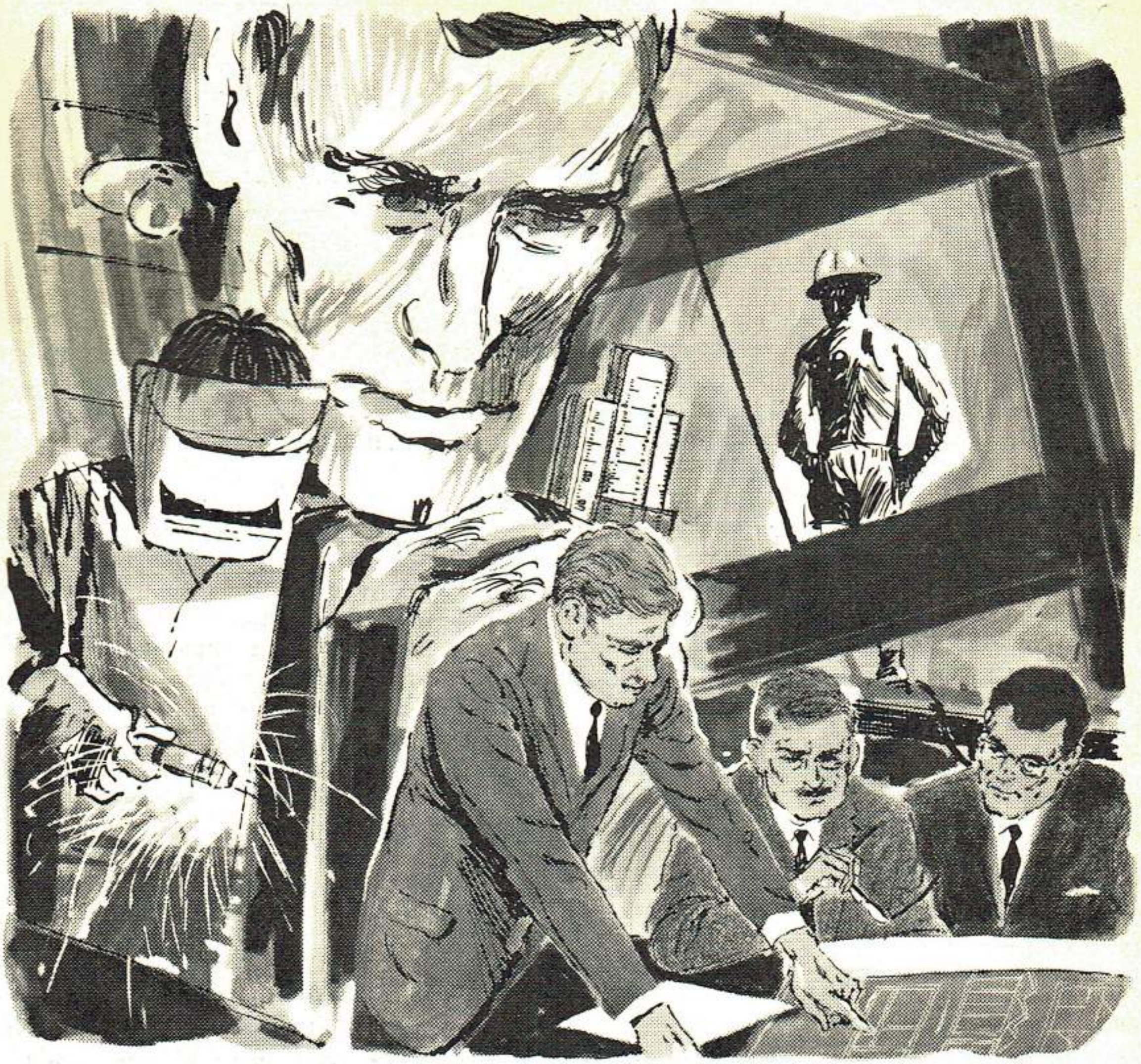


Sleep

by Jim Trevelyan

How often do you sleep during lectures and which lectures in particular do you favour for your rest?

How often does the lecturer's voice sweetly drift away to be replaced by the tempting visions of Friday night?

Recent research in the United States and the United Kingdom has revealed the first steps to working out how your brain works, in particular, how and why you sleep and dream.

The main instrument used for these fascinating experiments is an electroencephelegraph, or E.E.G. This machine uses tiny sets of electrodes implanted in your scalp and other areas of the skin. The resulting signals referred to as 'Brain waves" are amplified and recorded on moving paper. The result is a series of wobbly lines. The significance of some of these lines will be explained later.

Sleep has many stages. The more important are:

(a) Fully alert for example doing hard problems.
(b) Not so alert for example monotonous work.
(c) Dozing lightly.
(d) Deep sleep.

The last category is the one concerned with dreams. There are two types of deep sleep. Suppose we watch a patient as he falls asleep. Normally he would doze for a few moments but soon he is in the first stage of deep sleep (Phase I sleep). His muscles are relaxed but it is possible for sleep walking to occur. You would be very hard to wake up. After about $1\frac{1}{2}$ hours or so, a sudden change will occur.

Up till now a particular set of electrodes will have been giving your α rhythm—slow regular and very powerful waves with a frequency of about 1 cycle per second. Now this changes to a small irregular pattern. Also the eyes although shut, move about rapidly and so this stage of sleep is called Rotary Eye Movement sleep or R.E.M. sleep. Apart from your lungs and heart, etc., your muscles are entirely paralysed.

After about $\frac{3}{4}$ hour, another sudden change to Phase I sleep occurs and the two types alternate every $1\frac{1}{2}$ hours or so.

When patients were woken during R.E.M. sleep a surprising discovery made the scientists change their tune. Instead of watching the patient sleep to his heart's content, the poor man was woken time after time.

The discovery was that each time patients were woken up during R.E.M. sleep they said that they had been dreaming. Patients woken during Phase I sleep could not remember dreaming at all. It appears that while you are in R.E.M. sleep you are dreaming but during Phase I sleep you are not. The length of dream remembered by the patient varied with the time of R.E.M. sleep allowed before waking, i.e. if the patient was allowed more time, he remembered a longer dream. If, however, the patient was woken during a Phase I sleep, he could remember nothing. Only if the patient was woken a few seconds after a dream finished could he remember anything about the dream —unless he actually woke during the dream. It seems that the dream normally is just not stored in the memory.

Further research has indicated that in fact mental activity continues throughout the night but not much is known yet.

Do you need to dream?

The answer is almost certainly yes. Some patients (volunteer medical students) were kept awake for periods of 80 hours or more. By this time, apart from being irritable and of course extremely hard to keep awake, they began to see hallucinations and hear things that were not there. It seemed as if they wanted to dream so much that they were trying to dream when fully awake.

Other patients were allowed plenty of Phase I sleep but were woken as soon as R.E.M. sleep started. Since they started to sleep in the Phase I stage again they were in fact deprived of dreams. They became irritable and confused and it became harder to deprive them of dreams. Both groups of patients, however, had much more than their quota of R.E.M. sleep when they were allowed to sleep undisturbed as if they had to catch up on their dream time!

What do people dream?

The content of dreams is confusing usually and often nonsense. However, the dream ap-

pears to be influenced by events of the previous day, past memories and also any stimuli that may be applied while the patient is dreaming. For an example, there was a patient who had a red haired girl friend called Jenny. The experimenter recorded the word Jenny and played it back to the patient during his dream, who was later woken to find out what he had dreamed about. In this case it had been a jemmy with a red handle! You may have heard bells in a dream suddenly becoming that tin pest called an alarm clock. Flickering lights also influence the dream.

It has been shown now that the $1\frac{1}{2}$ hour cycle for dreaming continues during the day, so you may be more prone to day dreaming (a stage of sleep in fact) during certain lectures than others. This is something which you could perhaps try out next term!

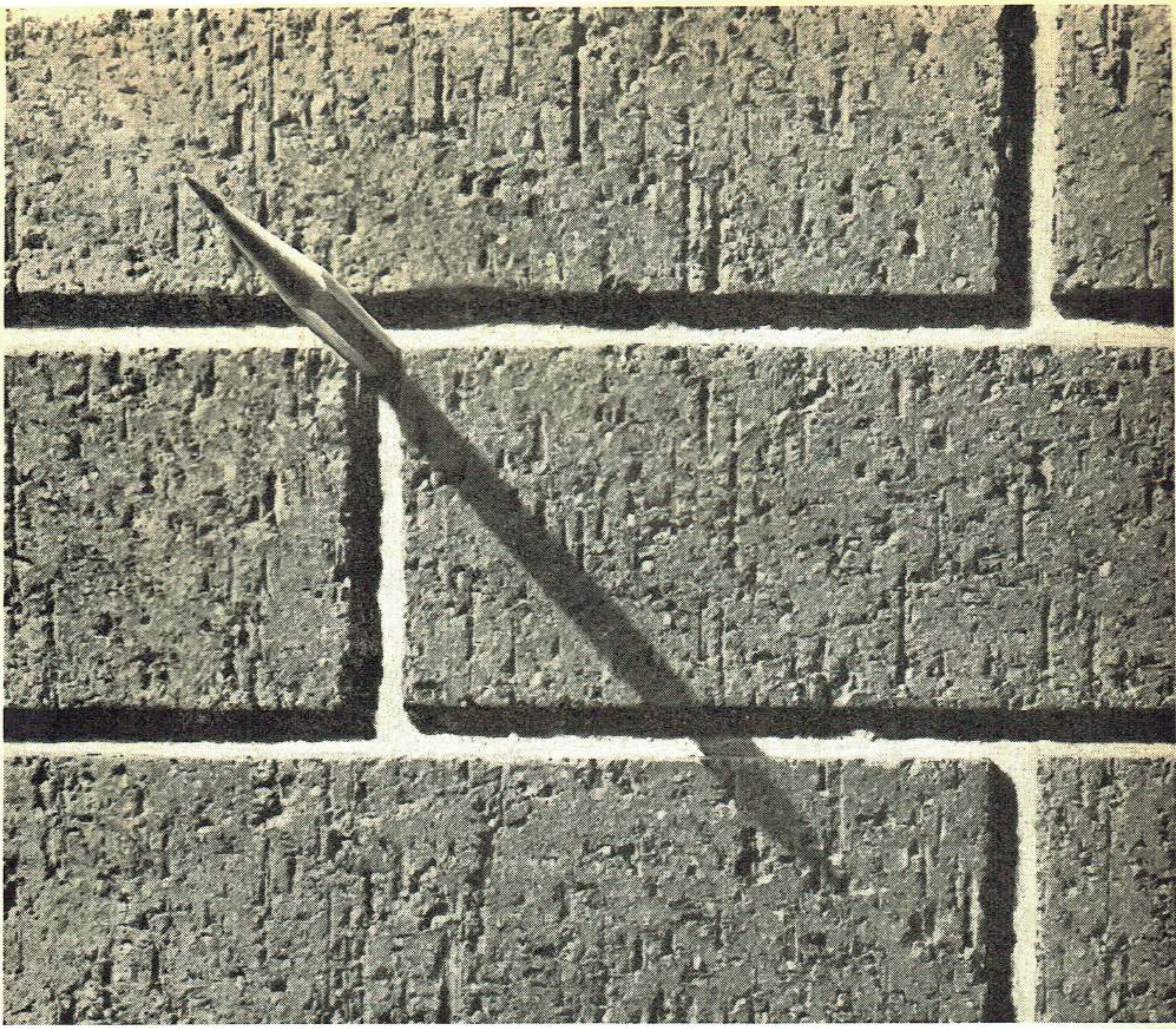
Drugs such as alcohol, pep-pills and sleeping pills all appear to be bad for you as far as dreams are concerned. We do not know how these drugs work but we do know that they inhibit dreaming considerably. The results are just as bad as those when people are prevented from dreaming and in a similar way addicts dream far more when released from the drug. In particular, sleeping pills, when taken even in normal amounts, inhibit dreams for a while. After about two weeks, however, the body adjusts and dreams occur as before. A similar reverse process occurs when the pills are stopped and as you are easily woken during a dream, you may wake more often than before and so take more sleeping pills, etc. The result is addiction and the consequences are not pleasant.

It is for this reason that experts are now searching for drugs which in fact increase dream time. One candidate is L.S.D. which can be useful under extremely well controlled conditions.

As you see, all we really have on sleep and dreams is travellers' tales. Knowing so little it seems to me to be so stupid to meddle with the most complicated machine known, in a way which no-one knows. After all, a machine like our brain deserves all the care we can give it!

Sweet Dreams!

J. P. TREVELYAN,
2nd Year Mech.



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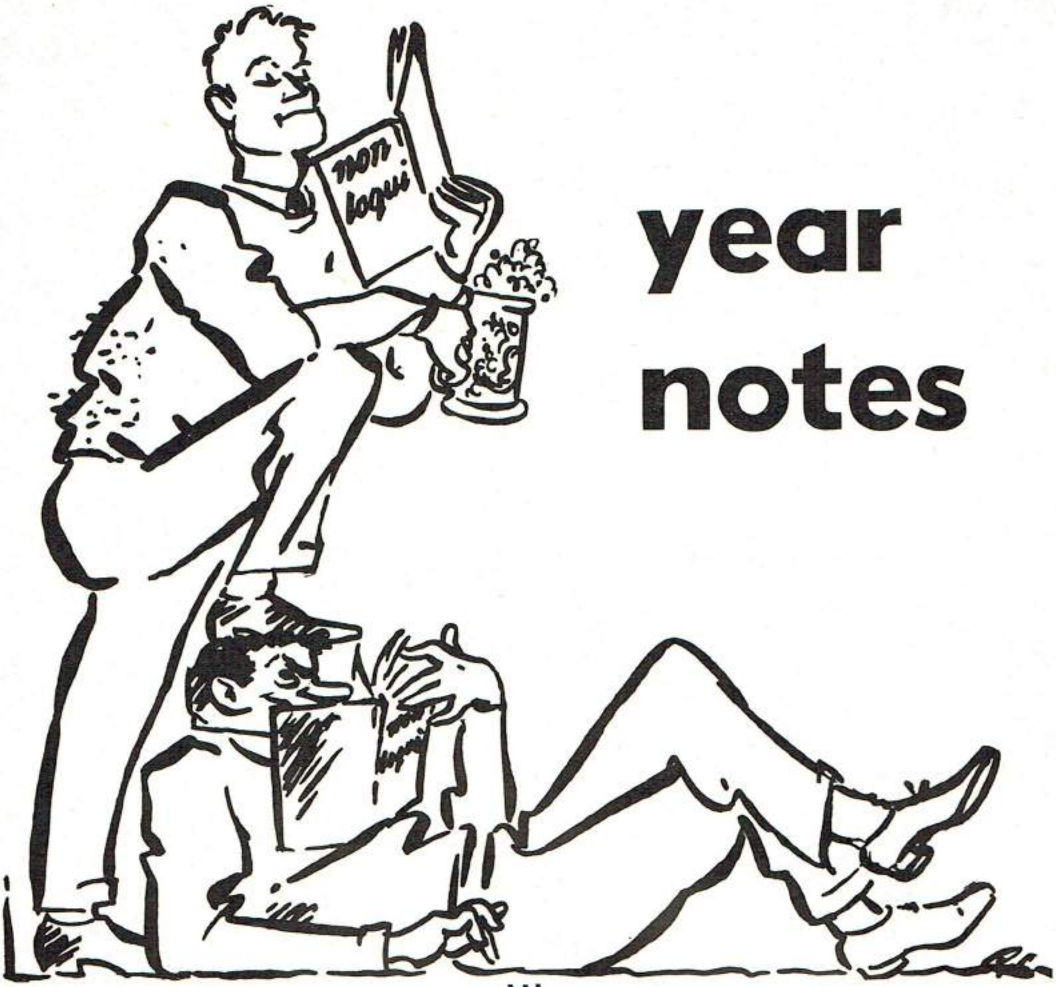


year notes

1967

First Year

The year started with more than one shock. There we were, one hundred and eighty 'kings' and four 'princesses'. Were they suffragettes or devotees?

The initiations were a screaming success, and we settled down, electing Les Hoffman to the hierarchy. "Will you listen here for a minute please fellas. . . ." It didn't take long for standing orders to filter through from above: we were expected to make a Prosh float. Ideas crowed in at the rate of one a year. In desperation we attacked a 'Women-dominate-the-Engineering-School' theme. Forty of us itched our way into hessian bags, tied ourselves in knots and paraded down Hay Street looking like a cross between a monastic procession and a strip-tease. The chants were hardly Gregorian.

We dragged the Tug o' War to an indisput able victory, though there were a few things who complained. Their president was soon ponded, restoring the status quo.

The first term tests were not blindingly successful, perhaps because we had 'azzoomed' that we knew something about Physics. The Chem. results were to be expected after Little's 'you-have-to-be-Asian-to-pass' line. Asking what he could do with the course next year, he received a spontaneous response.

A number of the clan rolled up to the Symposium shows to find out what we would smell like in four years' time, and politely stumbled over the hierarchy, who by this time were stretched across the floor.

In second term we made our big political move. Urged on by "Engineers can get things done" type propaganda, we crowded into Winthrop Hall, allegedly to give block support to an Engins anti-conscription motion. Fifty well informed, keenly aware political speculators watched avidly as Geoff Cock led a breakaway reactionary segment, but the motion was won by a small majority of 90%. Thrilled by their first dabble in Guild politics, our men had only one question: "What were we voting for?"

Sportingwise we supported football, hockey, rugby, rowing, table tennis and squash, but academic statistics were the most impressive: 50% attended lectures, 25% attended prac. classes, 10% attended tutorials and 5% attended compulsory tests.

GRAEME FERRERO.

SECOND YEAR

Standing (left to right): L. Crooks, S. Wade, P. Henfry, C. Drakes, P. Kent, G. Binckes, B. Bennett, C. Ho, M. Naismith, N. Tong, B. Combs.

Centre (left to right): G. Lowe, G. Hoey, T. Hambleton, D. Macdonald, D. Cousens, M. Lau, C. Chua, V. Power, S. S. Ng, J. Crow, R. Dimond.

Front (left to right): J. Yorath, J. Trevelyan, A. Van Der Meer, K. Beer, J. Van Der Meer, B. Kidd, A. Tiverios, A. Smith.

Second Year

Variety was the salient characteristic of the interests and personalities of the 108 second years. Like all quality grapes, they make an interesting bunch. Springing from apathetic roots of a vegetable—like existence in First Term the seedlings germinated in the sunlight of the May Symposium and in the Second Season, flowered into worthy fruitfulness.

We have some keen cyclists with and without motor. Those with (C.S., J.C., C.P., U.D.C.) and without (J.T., P.B., T.K.) a prospector (B.R.), a debater-astronomer who was once pictured in a weekend newspaper and a bearded Yoga enthusiast. Also we have a State Junior Golfer (also a woman), two or three sprightly gymnasts (J.H., C.S., etc.), three or four rugby players (S.D., J.H., T.H., etc.), hockey players (ATVDM, J.J.V.D.M., J.C., D.R., R.S., etc.). Footballers (J.M., B.C., L.C., D.G. etc.). Also polo player (D.M.), Mr. Spaghetti 1966 and 1967, also runner-up to Mr. Hairy Legs 1967 (U.D.C.), table tennis players (R.D., T.C.N., T.J.K.). A couple of tubbers (C.S., G.P.W.L., J.T.) also (A.S.) rows.

One chap sits up the back in lectures, sometimes comes late because his wife delays him. In the "Spectacular Department" we have a chap whose specialty is plane crashes (G.B.)—used to fly a lot too. Still another used his head to bounce from a car (C.P.)—looked better after his head was bandaged and there are no discernible abnormalities so far. We have guys that are deeply entangled in transistor circuitry (C.P., P.M. B.V.).

One chap is a Pelican reporter (P.B.) and a few of those politically minded or perhaps just neurotic ran in U.E.C. elections. Others even profess an interest in Guild.

The Second Years certainly have great potential both academically and socially and should become the controlling factor in 1968-69.

THIRD YEAR CIVIL

Back (left to right): T. Mok, A. Moyle, A. Burvill, L. Metcalf, A. de Rossi, S. Chwal, V. Acalinovich, C. Tate, M. Talianchich.

Front (left to right): J. Giumelli, R. Grieve, I. Morrison, H. Ventriss, K. Colledge, G. Mauger, C. Low, B. Greay.

Third Year Civil

Twenty-five men faced lectures at the start of 1967 to prove that University is a fountain of knowledge where students gather to drink. By the start of second term most had proved this true with the aid of the symposium—Jungles thought that the cabaret was such a great show that he laughed all the way through it.

It must be realised that third year Civil had its share of experienced men. In fact, ten of the twenty-five thought that the five year course was more beneficial than the four year one and had taken the steps necessary to make their wish come true. Judging from Mr. Reynolds' remarks, some are expected to stay around even longer!!

The highlight of the year was the acceptance by Mr. Sacks that his lectures finish at 12.45 p.m. and not 1.00 p.m. It seems amazing that previous years allowed that state of affairs to be carried on.

The favourite lecturer, no doubt was Professor Rex T. (Toodyay) Prider, but close on his heels must come Mr. C. A. P. Boundy, without whom the entire group would probably have enjoyed the August vacation. A lecturer, not from the Civil Department introduced trade unionism this year in the form of a lockout—putting this newly gained knowledge to work his next lecture was picketed by a splinter group.

But enough of the lions and back to the lambs.

Vin Acalinovich:

A fiery soccer player—was all up in the air (suspended) during the year. Took delight in abusing tutors, particularly females from the Maths Department.

John Bromell:

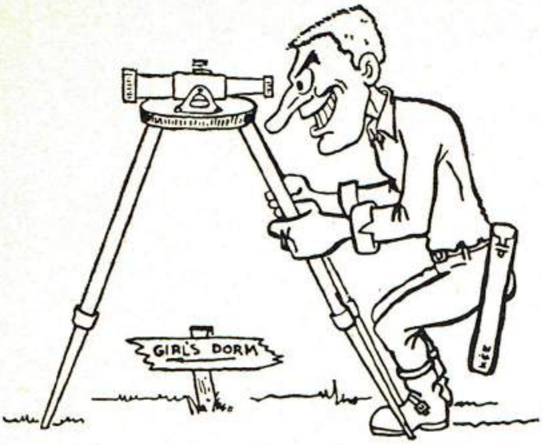
Judging from the condition of his hand before the symposium he must have found one with teeth.

Digs Burvill:

A star in Geology—seemed to do well at nearly everything else as well.

Cheong:

Had a bad habit of being late to Reynolds' lectures. Last seen standing in the middle of



SURVEYING ?

James Oval on a fine, cloudless day (70°F) with an umbrella over his head—said he didn't want to get sunstroke. (In September?).

Charlie Chwal:
If his frequent trips to Collie were any indication he might well be the first to go off permanently.

Kev Colledge:
Main sports: Boozing, Birding, Surfing and Studying.

Fred de Rossi:
Added much new life to the common room with the introduction of several Italian card games.

Jim Guimelli:
Along with Charlie and Fred took up yachting. Specialised in night navigation with no lights.

Bev Greay:
Ace rugby player. Noted for late arrivals at surveying field work. Found it impossible to stretch out in statistics.

Rufus Grieve:
A new face in our midst after last year's grand final.

Menno Henneveld:
Plays a mean game of darts. Ace stroker of boats, birds and other things.

Dave Hough:
Will Mr. Sacks ever get the correct pronunciation? Is it Hoff, Huff or Hoe?—only time will tell.

Ross Lantzke:
Descended from the hills to do battle with the lions on the plain each day. Quite a champion on the green, i.e. billiards and cross-country running.

Michael Low:
Believes in the Engineers' motto: A man who does not talk but works.

Jungles McGuire:
Er — ah — well — at least he *enjoyed* himself at Geology.

Geoff Mauger:
Drives a hot car, seems to have all the answers and somehow scores well at exam time.

Lynn Metcalf:
Found it took more skill to stick a dart into his ear than into the dart board—also got 5 A's last year.

Jimmy Mok:
A quiet young man, who has the knack of passing exams.

Ian Morrison:
Seems Julie is on the right track "If I don't leave Uni. with a bachelor of Psychology, I'll leave with a bachelor of Engineering".

Al Moyle:
While not surfing seemed very superstitious—often seen worshipping the spirits. Found some time to do some work—got 4 A's and a B last year.

Ron Renton:
Sam Rifici's nightmare. The first to get engaged this year. Knows now how linear the log function is.

Pete Sanderson:
Who described him better than Mr. Sacks? "The tall, handsome, lazy one".

Mick Talianchich:
A man who wanted to put a Studebaker V-8 in his Falcon—found he had to be content with a big box on the back seat. Was last seen riding a stolen bicycle across James Oval during surveying.

Chris Tate:
Mainly noted for behind the scenes comments in lectures.

Harry Ventriss:
Had a thumping good time in Goyder Cup rugby. First to light up during the lecture. Always seemed to have a woman after him.

THIRD YEAR ELECTRICAL

Back (left to right): R. Russell-Brown, L. Seddon, G. Milosz, C. Lewis, R. Perry, D. Myers, J. Llorens. Front (left to right): J. Lorenti, L. Hebiton, P. Lawrence, R. Stephenson, R. Dillon, A. Gatter, B. Zec.

Third Year Electrical

(Submitted for appreciation by all,
from C_2 H_5OH)

The year started well with analysing sessions from Doc. Fall, machine driven talks by Doc. Bundell, magnetic periods with Alby, transforming signals received from Doc. Leary, all of which were mixed/stirred/shaken with random, non-linear, singular mathematics lectures.

Eventually the maths mux-ip was resolved into two linear, complex, non-singular sets of lectures. Then the initiations were on with large numbers of freshmen (approximately ten million which increased in proportion to the number of glasses consumed) and only sufficient ales. The lack of ale was attributed to the rumble with the local mercenaries.

Suddenly first term ended with a lot of work not done, but THE SYMPOSIUM had finally arrived and neutralised the lack of work. Much merriment ensued with the wise men from the East during that never-to-be-forgotten week (or was it two weeks?).

To those who genuinely missed IT (e.g. suffering from broken arms and legs, double pneumonia, pregnancy etc.) I can only offer my very deepest sympathy.

Those who used an excuse to miss IT (e.g. no money, bird, time etc.) should never try to discover what you missed. Your poor, retarded, study-mutilated minds could not absorb such information without instant death. Now, back to work.

During second term it was realised that there were two distinct classes of beings in Elec. III:

1. Those who study (approximately 60%).
2. Those who don't—study, that is (approximately 40%).

From a recent statistical survey, an amazing fact was revealed: "Of the 40% of Elec. III that attend engineering social gatherings precisely equal numbers are of each of the above classes".

The most notable specimens in this group are as follows (not necessarily in order of intelligence, age, sobriety, loving ability or beauty):

Frank:

Seen but never heard. Another genius of the silent Asian type.

Ross:

Tries to fool everybody by attending all shows. In reality studies like a maniac.

Lyn:

Another who attends shows but studies secretly. At Christmas was feeling affluent and bought himself a new set of "wheels".

Paul:

Seems to think that the week starts on Tuesday when he copies out Monday's lectures. On Wednesday copies out Tuesdays' lectures, on Thursday . . . and so on ad nauseum. Upsets Chris sometimes.

Chris:

Lends notes, studies. "You're all idiots; Dunc talks in beautiful generalities".

Al:

(Alias Guts, etc.) Wears a light overcoat. Has a fantastic sense of humour; chuckles at all shows.

Pete:

Often attends shows and lectures the next day. Recently told us he had "shockies" put on the back wheels of his "transport".

Joe Ll:

Nobody thinks he is a genius because of his interesting statements: "Did you understand the rubbish in that lecture?"

Joe L:

A small, dark, rotund, jovial chap who studies hard and fools nobody.

George:

Enjoys himself during his repeat year. "Can't understand why you take notes in these lectures. We did it last year."

Doug:

Reputedly drives a fast powerful car at least 400 yards from home to University. "Don't know why it cuts out when I turn into the car park".

Mike:

Occasionally studies in the library. Sometimes emerges from a pile of computer paper to have a quiet one at Steve's.

Rod:

Found that a heavily overloaded RC amplifier displayed the profile of Sandra Nelson on a CRO. "You dirty old man".

Russell:

Was seen designing a push-pull crystal set after leaving his VW car radio on all day and requiring a push-start.

Bob:

The judo expert, married and old man of Elec. III. Practises judo in lectures, studies elsewhere. Reputedly has a beautiful wife whom "eye hath not seen nor ear heard".

Brian:

Missed one or two tutorials somewhere. Usually found in computer room or his Midland vineyards.

Laurie:

One who studies, but convinces everybody he will fail.

(Alcohol Does Good).

☆ ☆ ☆

THE MATHEMATICS OF SEX

A girl called *ana-lytic* was taken up to a room by her boy friend called *Max-imal.* He thought he was *set* at this *point* but she decided to *differentiate* between petting and sex and so she set a *limit* on what he could do. This was sad for max as sex was an *integral* part of his life. "Good *cosh*", he said, "I *sinh* when it comes to the *union* of male and female." "I'm just the *inverse*" she replied, "I don't think that *couples* should be so *associative* while they are still *singular.*"

"There is no *basis* for that *argument*" max retorted, "we were all made for love and there is no denying the *existence* of the urge to fulfil our *function*. At that point he tried to get her on his *matrix* but she struggled and was *subset* about it all, but it was only *transitive* and in the end he won.

This only goes to show that if you are *series* about what you believe in, then *determinants* will prevail in the end.

Non Loqui

THIRD YEAR MECHANICAL

Back (left to right): S. Yeap, J. Struthers, D. Coulter, J. Noonan, A. Scott, G. Barrett.
Front (left to right): K. Loke, G. Marsh, L. Scott, C. Poynton, T. Riley.

Third Year Mechanical

The group of 13 who beat the 2nd Year examiners combined well this year against the equal number of lecturers we faced. This makes it a hard year studywise to affect the great year socially, with one or two doing the study for those who were doing the socialising. The members of the group fronted up as follows:

Barrett, G.:

Amused himself keeping fit with judo and squash. Standard comment throughout the year on almost any topic, "I'm amazed that it actually works at all", fellow mechs were even more amazed about his car working at all.

Chia, B.:

One of the Kingswood latercomers.. Played tennis with great results. Battled through prac. with A.G.B.

Coulter, D.:

Beer capacity of just over two yards (measured horizontally when full), that was used with great frequency after playing hockey, golf or studying.

Loke, K.:

Always arrived, usually on time, with a broad smile, but was normally seen and not heard like some others.

Marsh, G.:

Another Kingswood latecomer. Not sure if classification should be Mech Engineer or Mechanic, as car suffered at his hands and occasionally was in one piece long enough to get onto the road. Has decided to hand in most reports after the exams.

Noonan, J.:

When arriving in the middle of a two hour lecture was asked whether he was looking for another lecture or was late for this one, casually replied he was one hour late for this one. This broke his consistency record of time of arrival of first lecture at 9:07.

Poynton, C.:

Another consistent late arrival with E.T.A. of 9:02. Must have fitted study in between rowing on the river, sculling at Buck shows and all the other balls.

Riley, T.:

If not studying or playing Euchre, could be found most of the time playing soldiers (do-

ing nothing) anywhere from Swanbourne to Northam.

Scott, A.:

The phantom scribbler, who produced blackboard murals from the Wizard of Id between lectures and who occasionally tried to play football for Uni.

Scott, L.:

Acted his way through the year, with a polished performance, relying on a cloud of smoke as a prop along with assorted drinking bouts before and after but NOT during.

Struthers, J.:

Doesn't appear to do anything but work, and doesn't appear to do very much of that, can usually be located in the magazine section of the library.

Sturman, J.:

The student of the group, who goes into everything in such detail that he makes things too difficult for himself and for his fellow sufferers.

Yeap, S.:

Table tennis champ who played with devastating effect during Goyder Cup and worked solidly at other times.

FOURTH YEAR CIVIL

Back (left to right): B. Tang, D. Fitzpatrick, M. Taylor, R. Male, A. Rozlapa, G. Martin, P. Scott, G. Watson.
Front (left to right): B. Carlton, R. Smailes, J. Wall, R. Lee, J. Gill, K. Walter, P. Eastlake, T. Ong.

Fourth Year Civil

The class of '67 was a varied collection of misfits, comprised of sportsmen, drunkards, womanisers and left-overs. The first week back proved to be an indication that previous traditions would be upheld, on a more grandiose scale. However, some complained when Friday afternoon lectures were not carried on at Steve's, as was the case last year. With only two fatal casualties and a few mishaps (quickly healed by supps.) the fourth years ventured to do battle with the lecturers again.

Some were surprised at the slackness of certain lecturers, and vice versa. Mr. Sacks—our Senior Lecturer in Surveying—was helped into resuming the weed habit by Yary at one of those interminable "tutorial" sessions.

Mr. (you can put this through the computer) Hebbert managed to struggle through his lec-

tures with his accent and store of Canadian tales. Mr. Matthews interrupted events in second term with the inclusion of assignments and tests, he obviously doesn't know what second term is for. Mr. Clegg believed in the rapid approach to lectures and was forever playing with matches. Dr. Massey preferred to remain in the background. He was rarely seen (except at seminars) and seemed to be in a perpetual state of retreat. Mr. Smith was sighted at the golf links and was strong in his advocation of ennui.

Carlton, Bill:

Assiduous secretary of the University Football Club, he believes in a steady diet of sport, women and beer. Voted the most eligible bachelor in the group.

Eastlake, Peter:

Often seen with a blonde these days. Believes in the old saying "When you're on a good thing stick to it".

Fitzpatrick, Derrick:

First man to study in his underclothes in front of his radiator. Claims that he was trying to get a tan. His main sport is twirling.

Frieze, Paul:

Was beating tracks for the first two terms. Has given this up for his geodesic dome. The tracks didn't beat him, maybe this will.

Gardner, David:

A pants man from way back. He is all for this mini craze. Believed to be considering a mini suit for his wedding. Has trouble making ends meet.

Gill, Jim:

Moved into St. George's to be voted the College head (was flushed—with pride?). Strums a ukelele when not frigging with the PDP-6. Is destined for bigger things.

Lee, Richard:

He had trouble with his glands earlier in the year and this forced his abstinence from the better things in life. Is now believed to be making amends.

Male, Robert:

Big Bert keeps bad company—is the only real link we have with the lawyers and the natives of New Guinea.

Martin, Gregory:

A diligent worker. Was inspired with his honours thesis—The Dynamic loading of Struts—while spiking a keg.

Okis, Jaroslaw:

Quietly confident—Sexwise? His next will be his second having given up all hope of having his first. Yary's main sport is tobogganing.

Ong, Tommy:

At present devising more dramatic photographs of his bird having already snapped her in front of every major structure in Perth. Believes in turning seminars into exhibitions.

Rozlapa, Andrew:

Threatened to dry up during his history seminar. Has found a steady state solution to his typing problems.

Scott, Peter:

Doesn't drink or smoke. It's whispered that he's found a new vice. Sometimes breaks the monotony in lectures with obscure questions.

Smailes, Russell:

Life for Russ is just a continuing procession of ups and downs. Was one of the few people happy to see the Bulldogs in the final four.

Sobejko, Kasper:

He succeeded in lowering the morals of More College merely by his entry. He is now doing a crash course in biology.

Sylwestrzak, Donat:

Our man at Steve's. Says he won't drink any more, he's drinking enough already!

Tang, Bee Kok:

Has shiny white teeth. Was overheard to have said, "I abhor publicity".

Taylor, Michael:

He's not the baby of the year, he just looks that way. Managed to enjoy home cooking even when his parents were away on holiday.

Wall, Jim:

Gained renown for his brilliant organISATION of the social events for the symposium. Has a peculiar knack of asking the relevant question especially during Mr. Sack's lectures.

Walter, Ken:

Was seen to arrive early for a lecture, once. The most photogenic of the group he tackles winter week-ends with a crooked stick.

Watson, Jeff:

Continues to pass through exams unscathed. His sporting interests are of an aquatic nature. He's developed a complex about being last on lists.

FOURTH YEAR ELECTRICAL

Back (left to right): T. Kings-Lynne, R. Winslade, Teo Heng Lam, J. Della-Bosca, R. O'Donoghue, G. Leivers, A. Chintakananda, P. Schoonens.

Front (left to right): M. Richards, Yuen Wai Ling, A. Cantoni, E. Cygler, M. Matassa, T. Fuller.

Fourth Year Electrical

Tony Cantoni:

Undisputed leader of the "big four". Has set an academic level which few of the class can follow let alone match. However he has paid the price for success and much prefers the six to sex.

Asvin Chintakananda:

Third favourite for the stakes, now that he has finally found a girl with a name longer than his. Tried to grow a beard with twenty hairs but failed to impress. Gave a seminar from his lecture notes. A sincere bloke with a reputation as a smooth conner.

Ed. Cygler:

A57759 Cadet Cygler E. got away to a flying start this year but very quickly decided that Tommy More was a better place than Pt. Cook. Has excelled in gymnastics and grumbling. Also grew a beard (much to everyone's surprise).

John Della-Bosca:

John has established himself as the foremost phantom worker with repeated denials of doing any study at all. His most frequent comment: "Ha ha—Joke". One of the best dressed in the class he was only once seen this year without his tie. A great bloke and affectionately known as "Desert Boots".

Geoff Leivers:

Leivers made the State surf boat team for the second year running. Also active on the surf club social side which has stood him in great stead for many U.E.C. drinking and stoushing bouts. Kept the books for both the U.E.C. and the Symposium. Last seen playing cards in the common room.

Terry Kings-Lynne:

"Ring", although a member of the big four is easily the slackest of the whole class. His genius is well disguised. After much practice

he has become most adept at the traditional engineer's pastime. Famous for his four-day pub crawl with the sailors of H.M.S. Hermes at the end of which he flaked for the night on the wharf.

Terry Fuller:

Took first term off to go fishing. Has become firm favourite to take second place in the engagement stakes. Can be found any time by checking the wall in front of the Reid Library.

Mario Matassa:

The man with the money—being treasurer of two University clubs, one of which ended up bankrupt. Study habits rather obscure, but favourite to win job of coffee taster at coffee shop. Seen as possible dark-horse in Stakes.

Mack Richards:

Has jeopardised his image in the "big four" by repeatedly fronting up at shows—with a bird. Featured in the newspaper for his effort in King's Park. Sails radio controlled boats and an A40.

Bart McCarter:

"The first one to go" among the 4th years. Spends most of his time with Helen, trying to make up his mind whether or not he should attend the next lecture. Known as the "married man". Showed true willpower by giving up drinking for 12 hours before 21st birthday.

Richard O'Donoghue:

The "king connes" found out that females existed towards the end of first term. Hasn't been himself since and always heard talking about women. He and Mack are known among girls as "The Terrible Twins". His lab partner gave up when Dick could only recognise female shapes on the C.R.O. Spends rest of his time in playing the trumpet.

Teo Hang Lam:

A real dark horse, and rarely seen between lectures. Always worried about his work, and one of the few who needs any reference books.

Yuen, Wai Ling:

One of the "big four" who has never been known to talk to a girl. On getting upset by the lecturers, is heard to utter "thoughts" from Mao, and has been hard at work in trying to organise a Red Guard on Campus. Noted for his ready help during laboratory classes.

Peter Schoonens:

Conned a hundred birds in one day for the Symposium shows. Lost his bird when he asked her to type out the Symposium song book. Liked fourth year so much he decided to stay much to the dismay of the lecturers. Known to say more in a lecture than the lecturer himself.

Dick Winslade:

Did a really great job of organising the Symposium. Often disappeared to do the work he claimed he didn't do. Established himself as the second foremost phantom worker. Liked Prac, Vanguards and women in that order. Sports included boozing and conning. A great bloke.

* * *

According to the theory of aero-dynamics, and as may be readily demonstrated through wind tunnel experiments, the bumble bee is unable to fly.

This is because the size, weight and shape of its body in relation to the total wing-spread makes flying impossible—but the bumble bee, being ignorant of this, goes ahead and flies anyway.

* * *

Lots of girls can be had for a song. But it often turns out to be the wedding march.

FOURTH YEAR MECHANICAL

Back (left to right): F. Shier, P. Hopwood, D. Bocking, T. McMath, A. Reith, R. Waring, R. Watkins, M. Want.

Front (left to right): Chang Kok Foo, K. Peh, V. Ng, R. Gunn, R. Oehlers, P. Nicholson, D. Mackinlay, Ung Tea-Kruy.

Fourth Year Mechanical

AIM: To classify the types of gear to be found in the group known as 4th Year Mech.

METHOD: (h) random observations in AIOSC.

TIME: Winter.

RESULTS: *Class 1*—A (upper level).

D. Mackinlay, Esq., awarded Walsh's 5 star award for suavity in the Face of Slovenly Dress. A well-deserved award, for Dave was always immaculate, often literary, occasionally absent, never anything but impeccable.

Class 2

Peter Nicholson—dressed exclusively by Plaza Esquire and/or Mary Quant. The only engineer to wear epaulettes to lectures, Nick was usually well-dressed but occasionally lapsed into a blue quasi-fisherman polo-neck jumper and slack red cardigan. He set a record by being censured by the Head of the Faculty at six consecutive seminars for not maintaining "protocol".

Class 3

This group has four established members, namely Rod Oehlers, Mark Want, Peter Hopwood and Bob Gunn and one strugggling aspirant, Denton Bocking. Common to all these is the desire to wear a tie to lectures, but for reasons which shall remain nameless, this often is not the case. It must be said that four of the best-established romances exist in this group, and, as was said before, Denton is only a struggling aspirant.Rod has the tightest trousers, Bob has the reddest eyes, Mark has the most blue shirts, Peter has the baldest head and, of course, Denton is only struggling.

Class 4

The conventional dressers—Alan Reith and Ray Watkins. Quiet, conservative men at first glance, but upon closer inspection it will be noted that Ray wears ripple-soled shoes and, it is believed, a bullet-proof vest (hints of a metallic substance have been noticed beneath a blue

jumper he often wears). Alan's major eccentricity is his rapidly distintegrating automobile —an FJ which has been known to shed wheels in Stirling Highway.

Class 5

The Protocol Harem—Jimmy Peh, Val Ng, Chang Kok Foo and Ung Tea Kruy. Always sporting the best of manners but often a weird mixture of clothing, viz., bright red socks, blue sports coat, subversive-black windcheater, single lens reflex camera. All performed well at the staff/student barbecue, as several Foo-photos bear witness.

Class 6

Booming brown corduroy trousers plus sleeveless jumpers; no tie ever worn to University; sports coat and white tee-shirt in juxtaposition. These dress-modes categorise the remaining three gentlemen of 4th year Mech., Fred Shier, Ross Waring and Tom McMath. These men are individualists, why should they conform? Just because a lecture is timed to start at 10 a.m. is that any reason for Tom to appear before 10.10 or 10.15, or ever?

Conclusion:

It has been shown to a 1% alpha-level that in 4th Year Mech., absolutely no correlation exists between mode of gear and:

conscientiousness
punctuality
bachelor-eligibility (sex appeal)
sports-mindedness
socialification
or, indeed, anything at all.

☆ ☆ ☆

POLICE NOTICE

A reward is being offered for any information leading to the arrest of D. C. Current, who is charged with the induction of an 8 year old coil named MILLI WATT, found half choked and robbed of Joules.

The unrectified criminal, armed with a carbon rod, escaped from Seclanche town Primary Cell where he had been held prisoner in ions. The escape had been planned in three phases. He firstly fused the electrolytes then climbed through a grid, despite the impedance of the wardens, and finally went to earth in a magnetic field.

He has been mission since FARADAY. It is reported that he has stolen an AC motor. This is of low capacity and it is expected that he will try to change it for a Megacycle and return ohm by a short circuit.

The public are warned that he may offer series resistance and that he is a potential killer.

* * *

Lawyer reading client's last will and testament to a circle of expectant relatives—"And so, being of sound mind and understanding, I spent every damn penny of it before I died."

FIFTH YEAR CIVIL

Back (left to right): K. W. Ng, N. B. Mac, E. Pritchard, J. Wallis, G. Kikiros, J. Jefferies, D. Harvey, B. Clark, D. Rushton, B. Mercer, P. Kerr, J. Lim, T. Flintoff.

Front (left to right): Mr. R. H. B. Hebbert, Mr. H. Craddock, Mr. R. Sacks, Dr. C. Massey, Professor W. T. Marshall, Mr. B. Clegg, Mr. B. Smith, Mr. J. Matthews, Mr. S. Thomas.

Fifth Year Civil

"What the hell to write for Year Notes!"

"Same bloody drivel you get every year . . . what drivel are you going to write this year?!"

"What about a paragraph on the President of the U.E.C.—you know—great job he's doing; all that sort of spiel . . ."

"On your back, Ted!"

"Usual junk will do—where we're going next year; who we're working for, etc."

"If anybody in this club gives a damn where we're working next year, I'll rewrite all this year's notes—and last year's Surveying 40 notes."

"That drastic huh?"

"Hang the Year Notes—I just want to get out of this place—the atmosphere is heavy with the smell of rotting vegetables!"

"Alright Wax Ears—what about some concrete suggestions."

"Do you mind!"

"Sorry about that."

"Look, let's go through the fellas alphabetically."

"I thought you'd suggest that Clarke."

"O.K. then—what can we write about Barry?"

"Likeable, good-looking, rugged sort of guy . . . ."

"Someone step on Clarke for a minute."

"I don't know . . . he has changed quite drastically over the last two years."

"You're not going to put that in print are you?"

"Just think he's been changing right next to me for two years and I didn't notice a . . ."

"Let sobriety and sanity prevail!"

"Or, get off the table Tom, let's not start a bloody Hitler revivalist meeting now."

"With hair like that?!"

"It wasn't a Nazi salute ignorant—I was delivering . . ."

"Oh, for Christ's sake . . ."

"Yeah—that's the fellow."

"What about a sort of summary of the whole group—on one hand we have the quieter con-

scientious types—Dave, Job, "Dave" Ng, George is a bit that way and . . ."

"Did Dave Ng ever tell you about his International Co-mingles with those Thai birds near the border?"

"You can't write that you twit—it would never get past McCarthy!"

"He'd certainly read it tho'!"

"Let's not get personal—how about getting back to the Year Notes fellas."

"How about the big sales pitch—you know—the most kicking, beer guzzling, club conscious group in the club."

"The slackest too!"

"Well you can't be all that and conscientious too!"

"What are we going to do when they let us loose from here—I'll feel as tho' I've just pulled off the greatest modern day hoax when they hand me a degree."

"Just imagine—walking down the aisle to collect your degree and a little man in an outsize pie-board leaps out of the crowd and exposes you—dancing around you gleefully, pumping basic Civil Engineering questions at you—all you can do is stand there and pretend you didn't quite catch that first question—I dreamt that you know, but I'm sure it's a premonition!"

"You could mention all the fellows who were married or engaged this year . . ."

"Is that your best effort, Pete?"

"How about a scathing attack on the uninspiring lectures—always good for a laugh."

"I don't think that's particularly funny."

"It wasn't too funny at the time either—don't you think that some sort of inspiration should come from the lecturers—I mean look at the money they're paid—half of them might as well hand out cyclostyled lecture notes and leave it at that."

"Do you know we pay over 50 cents for each lecture—can you imagine paying that much before you walked into each lecture?"

"Over $1\frac{1}{4}$ bottles per lecture?! God no!"

"Just imagine them—standing at the door shaking a tin—just think of the racket every hour!"

"No, you can't attack the staff except if it's nice and light and humorous . . ."

"Why have we remained so disenchanted with engineering for all these years?"

"Possibly because we're an unacademic lot—the old university pitch just doesn't get thru'."

"I think we have gained some benefit.—"

"Reynolds said it in third year, 'You're the dumbest lot we've had for years'."

"Oh rot! — we're not dumb — just slack."

"And we're slack because we're uninspired, right?!"

"Keep talking and you'll convince yourself of that, you dumb sweat!"

☆ ☆ ☆

Alimony—the billing without the cooing.

* * *

Absinthe makes the tart grow fonder.

* * *

A famous pianist was asked to explain why the keys on his piano were yellow. "It's not really because the piano is so old," he replied. "It's just that the elephant was a very heavy smoker."

* * *

She was so dumb that even the other blondes noticed it.

FIFTH YEAR ELECTRICAL

Back (left to right): D. Hambleton, G. Chapman, G. Marie, D. McCarthy, C. Kosina, K. Walters, B. Coghlan, M. Slee, Yeoh Seng Hock, C. Nathan.

Front (left to right): Mr. Z. Budrikis, Dr. J. Mills, Prof, A. Billings, Dr. B. Leary, Dr. J. Fall.

Fifth Year Electrical

1963-7 ENGINEERING CIRCUS

Performing Animals:

Graeme Abbey:

Attended Margaret rather than lectures. Consequently was rarely seen. Reappeared at exam time to reaffirm his existence. Responded to the call of the wild; got married, headed for the bush.

Graham "Rolly" Chapman:

Endured more EP51 prac. (3 weeks) than others found humanly possible. Played host to Gledden Tourists in Canberra and his departure for that city is imminent.

Brian Coghlan:

A recently discovered Irishman. With Pete Schoonens built a receiver for pictures from Nimbus. Couldn't find the satellite so went to Woomera to launch his own. Staff lost lunch over his 80 minute seminar. Will work with IBM.

Dennis Hambleton:

Drowned at last year's dinner. Was anxious to return from Gledden before he'd left. Marries Linda in October to take off the marriage stakes. Future with P.M.G. and army uncertain.

Charlie Kosina:

Took off the Fisk Prize in fourth year and is favoured for fifth year honours. Won Institute Car Trial and will marry his navigator in January. Is with the Department of Supply at Salisbury.

Greg Marie:

Failed to read BGL's "danger signals" in fourth year and helped inaugurate the FP system. Has not recovered from the effects of Philosophy 10. With CJN formed a dynamic prac. team. Belongs to the P.M.G. and the Army.

Dan McCarthy:

A dedicated mathematician and U.E.C. News editor in third year, he showed a marked change of outlook and became a Behan disciple. Reliably late for all lectures. Future undecided—Perth or bush (Ireland).

Cary Nathan:
Was great ($13\frac{1}{2}$ st.) ambassador on Gledden; put foot in wrong hole at Sydney. Is noted for his entertaining flying and feat of missing 25 of the Phantom's 27 lectures. Future undecided.

Mike Slee:
Had a heavy Gledden Tour and skippered tubs to victory from sickbed. Put in hard fifth year and is off to England via Sydney for English Electric.

Ken Walters:
Left Gledden Tour to play romantic lead on location in Tasmania. Engagement announcement quickly followed and Ken and Betty will be married in January. Future is undecided but Army may have first call.

Bob Yeoh:
Won the prize in EP40 and also an FP. Shortly to depart for home. We all wish him well.

Chief Comedians
The Prof. Keith "Phantom" Taplin, John "Eyebrows" Fall, "Noddy" Mills, the Zig, Dunc, Little John the Steam-roller HB, Brian "Little Nipper" Leary.

FIFTH YEAR MECHANICAL

Back (left to right): D. Tang, M. Halleen, K. Campbell, A. Thomas, T. Eastwood, D. Macey, I. Jeffery, R. Paterson, K. Allen, L. Kirkham.

Front (left to right): Mr. J. Appleyard, Mr. R. Noyes, Prof. D. Allen-Williams, Mr G. Lutz, Mr. J. Blair, Mr. R. Johnston.

Fifth Year Mechanical

It was a short year—like this article.

Significant Events:

Mechanicals came home victorious from the Gledden Tour with the Gledden Glug firmly in their grasp. A tremendous amount of effort and hear (especially Ken's) went into this and it was a fine win.

Dave was seen at some lectures and even arrived at 9 o'clock on a few occasions.

Ken took Joan out.

Mechanicals were apathetic to club activities.

Mick preserved the dignity of the class by always wearing a coat and tie.

Keith surfed.

Mechanicals built an almost exact replica of an early steam engine, which combined with the Electricals' lighting effects stole the show at the Ball. It was not known what the Civil exhibit

was but it was believed that a pile of shrubbery in the corner had something to do with it.

Trevor went on "fishing' 'trips to the South-West.

Tombot did nothing exciting.

Don dreamt of a girl across the sea.

Ian talked about planes.

Rick went even faster on land and water.

Lin talked for too long at seminars thus lessening coffee time.

Everyone felt that five years was far too short and wanted the course extended to ten years.

Graduates 1966

RAY COLE with the graces of the P.M.G. returned to the W.A. University to continue work in the thin film area with the aim of obtaining a Ph.D.

WAL CORISH had some trouble in finding a job in his studied profession. At various stages he has cleaned boilers and done chemical analysis for an American firm in the North-West. Finally exhausting all possibiilties in the West he went East followed by his girl friend, Jan.

PHIL DUFTY, a State Government Cadet, deciding that the State Government did not offer satisfactory employment left and obtained a more demanding occupation with the University Computing Centre.

JOCK IRVINE has been the only member of the class to join the ranks of married men since the exams. He is fulfilling his bond with the S.E.C. and helping to run the Muja Power Station.

ROMAN MALYNIAK thought better of going out to work and returned to do post-graduate work at the W.A. University. He is hoping to obtain a Masters Degree for work in area of active thin films.

KEVIN McGILL straining at the Public Works Department's leash has managed to enrol for a Ph.D. thesis with the controls group at the W.A. University. He is often seen with a tape recorder down at the South Fremantle Power Station listening to its internal noises.

KEN MOORE, after managing to survive economic pressures for five years and remain unbonded, finally succumbed after fruitless job hunting and joined the P.M.G. Since then he has shaven his rather unique beard and grown it again while spending some time at Wyndham for the Radio Section.

RIC MOUNT, another P.M.G. worker, is engaged in the special projects section and spends little holidays of some two months or so in places such as Hall's Creek. A situation somewhat annoying to his wife.

NAWAWI decided that another year in Australia would be most beneficial and has joined the P.M.G. under a Colombo Plan agreement to gain extra experience. He has since travelled to Sydney and is doing a P.M.G. Traineeship.

RIDZUAN also deciding further experience was essential went east to help the Snowy Mountain Commission with its huge undertaking.

TAI, after leaving for home the day after his exams, has again reappeared in Australia, working at the P.M.G. Research Labs in Melbourne. His optical communication link occasionally works with limited bandwidth when there is no fog.

COLIN VEAL when finally forced to go to work journeyed to Point Cook, Melbourne, where he is doing an officers' training course for the R.A.A.F. Dislikes referring to everyone as "Sir".

PETER WALKER departed very suddenly for South Australia after the exams finished. He has finally settled at Salisbury after doing a shuttle service for some six years.

KEN WINTERS, another P.M.G. man (everyone works for the P.M.G.) is known to work for their South-West Division.

WONG, the last heard of this confirmed gambling man was that he was headed home for the east coast of Malaya.

CHRISTOPHER, J. B. (Flg. Off.), the first W.A. engineer to draw a marble; joined the Air Force to see the sky and escape Harold's draft. On reflection, surprised no-one when taking off the prize in Industrial Engineering. Rumoured to be at a secret airbase near Melbourne.

WAYNE, B. B., our soothsayer, whose last prediction was fortunately true. Rapidly ascending to the Architectural Div. of P.W.D. and enjoying life; still unattached.

CHENG (James), H. P., should go far; returned to Hong Kong after his long stay here. Never did find out if he had someone waiting for him at home.

DAVID, J. C., the only member of our group who thought five years of engineering wasn't enough. Eventually married his physio (courtesy U.E.C. Co-mingle 1964). Now off to

Canada in pursuit of a Ph.D. May still reach the moon someday.

ALAN (Dicko), W. D., our apple king. Another bright lad who thought five years was enough. Now working for Ford in Melbourne, bachelor status more doubtful every day.

DAVE, F. F., fast increasing the population density of a Perth suburb. Son has the same incredible intelligence and rugged look. Working for W.A. Public Works.

HUGH (man), R. R. purchased an expensive piece of highly-compressed carbon for Val, married her and left for Melbourne soon afterwards. Another government man, this time Commonwealth. A good tubber.

PETER (Stu), G. S. in Melbourne with a consulting firm. Will probably produce long, thin pieces of equipment to conserve space (e.g. golf clubs).

TEH, J. K., another Asian compatriot, who returned to Malaya with 1st Class Hons. Helping a well known oil company to deplete the world's supply, so he can use his knowledge of nuclear engineering to advantage.

Students 1967

FIRST YEAR:
Adams, J. C. S.
Allen, D. E.
Allen, J.
Anderson, D. N.
Anderson, R. L.
Ang, K. L.
Banyard, R. E.
Barker, F. D.
Basell, M. C.
Basuki, J.
Bennett, E. V.
Blackborrow, J.
Brayshaw, G. F.
Broun, C. R.
Bryant, F. J.
Burke, A. J.
Burton, C. W.
Candy, R. I.
Caro, J. C.
Chan, K. E.
Chi, J .R.
Chia, K. W.
Chin, K. S.
Chong, K. P.
Chou, S. W.
Christou, J. V.
Clark, D. N. B.
Clarke, J. F.
Clarke, R. K.
Cliff, M. L.
Cock, G. C.
Coleman, A. K.
Collins, I. B.
Condipodero, C. A.
Crosby, H. J.
Croy, M. W.
David, D. J.
Davies, D. F.
Davies, L. M.
Djohan, E. K.
Douglas, B. M.
Dowling, M. E. C.
Edmonds, D. R.
Edwards, D. L.
Edwards, G.
Edwards, G. T.
Elderfield, G. P.
Faigenbaum, D.
Ferrero, G. T.
Fitzhardinge, C. B.
Fitzpatrick, K. M.
Fok, W. C.
Foong, K. K.
Fung, T. B.
Gallagher, T. J.
Gaunt, G. R.
Gavranich, B. B.
Gill, T. S.
Glenister, D. J.
Gobolos, A. Y.
Golowyn, K. G.
Gong, N. C.
Gorham, G. R.
Hackmann, A. H. D.
Haime, A. L.
Hall, G. L.
Hamley, R. E.
Hammer, R. W.
Hammond, P. V.
Harvey, K. F.
Harvey, R. A.
Harvey, T. S.
Herd, D. B.
Hesford, G. A. J.
Hewett, J. D.
Hickson, A. E. H.
Hoffman, L. S.
Hogg, K. D.
Hrynkiw, M.
Hughes, O. E.
Hung, N. T.
Hutton, I. M.
Jayasuriya, A. M.
Jensen, E. B.
Joeswantono, B. K.
Jones, K. P.
Jones, T. R. A.
Jordan, E. N.
Jordan, J. G.
Kay, A.
Kee, S. B.
Kelly, D. W.
Kemp, J.
Kirchner, V. L.
Koh, H. K.
Koh, K. E.
Krasnostein, P.
Ladyman, R. P.
Lau, C. R. A.
Lawler, G. J.
Leahey, J. E.
Legge, D. P.
Leonhardt, R. P.
Leung, T. H.
Loughton, B. J.
Lowe, S. N.
Luciani, L. E.
Ly, T. V.
McCann, D. J.
McDonald, R. J.
MacPherson, J. D.
Maluish, A. G.
Manohara, C.
Margetts, L. F.
Marion, G.
Marsal, A.
Marshall, O. A.
Martin, G. R.
Massey, J. B.
Moriarty, M. J.
Mortimer, D. J.
Muhammad, N.
Murray, R.
Mustofa, K. R.
Nadebaum, P. J.
Ng, T. H.
Nicholson, G. C.
Nicolson, D. C.
Nilsen, B. O.
O'Brian, T. A.
O'Connell, D.
O'Leary, B. K.
Ong, C. C.
Ossolinski, G. A.
Parker, I. W.
Paterson, P. J.
Penstone, A. P.
Pollett, C. G.
Quinlan, J. J.
Quinn, R. J.
Raeburn, J. M.
Raymond, D. J.
Rho, L. A.
Richards, C. C.
Roberton, J. J.
Ryan, J. D.
Ryan, J. J.
Sallustio, N.
Samad, R. B. A.
Simpson, G. P.
Snook, L. P.
Soong, K. M.
Stacey, A. O.
Stone, P. H.
Subroto, W.
Tan, A. S.
Tan, W. S.
Tay, C. N.
Taylor, B. R.
Terry, W. S.
Thorn, Y. F.
Threllfall, H. J.
Van der Linden, A. H.
Waddilove, J. N.
Winkler, F. R.
Wyche, P. J.
Yeap, B. C.
Yeo, C. T.
Zekas, L.

SECOND YEAR:
Ali, A. L.
Anderson, J. J.
Bagworth, G. J.
Ban Do-Danh
Beale, J. S.
Beer, K. J.
Bennett, B. L.
Binckes, G. K.
Blaquiere, A. H.
Brearley, P. M.
Campbell, R. A.
Chang, C. L.
Chua, C. T.
Chuong, N. V.
Combs, W. F.
Cook, M. D.
Cousens, D. F.
Crooks, L. W.
Crow, J. G.
Cwiek, V. E.
Danh, H. Q.
Di Camillo, J. G.
Dimond, R. M.
Dobson, S. G.
Downie, B. F.
Drakes, C. J.
Dwyer, P. R.
Filippi, U.
Forrest, K. J. R.
Gazia, C. R.
Gerloff, D. M.
Gilbert, M. J.
Goon, K. P.
Hai, C. P. T.
Hambleton, T. C.
Hasbullah, M.
Heatly, K. M.
Hemsley, P. A.
Henderson, J.
Henfry, P. E.
Ho, C. U-C.
Hoey, G. A.
Hume, D. G.
Humphries, D. N.
Humphry, T. R.
Johansen, E.
Kangsanant, T.
Kent, P. R.
Kidd, B. L.
Kiet, T. A.
Kitchin, B. J.
Koenig, A. A. H.
Laird, J. M.

Lau, M. T.
Lee, Y. J.
Liaw, A. H.
Liew, C. N.
Lim, S. K.
Lowe, G. P. W.
Macartney, J. A.
Macdonald, D. G.
Mak, W-L.
Morgan, P. D.
McBean, D. J.
Naismith, M. A.
Neish, A. J.
Ng, F. K. C.
Ng, S. S.
Ng, Y. M.
Nguitragool, C.
Ong, F. X.
Pearce, A. R.
Phiet, D-Q.
Pooi, C. K.
Power, V. F.
Prosser, C. J.
Quek, P. H.
Rapley, D. N.
Rischbieth, W. T.
Sayer, C. N. F.
Smith, A. G.
South, P. G.
Spence, R. E.
Stojanovic, M.
Tang, C. N.
Teh, J. K.
Tham, C. K.
Thum, C. H.
Tinh, V. V.
Tiverios, A. J.
Tong, N. T.
Treesuwan, S.
Trevelyan, J. P.
Truong, P. T.
Turner, R. F.
Turner, R. J.
Van Der Meer, A. T.
Van Der Meer, J. J.
Varley, B. E. C.
Vu, L-A.
Wade, S. N.
Warnock, D.
Watanatada, T.
Weijers, A. J.
Wiriyacosol, S.
Yorath, J. L.

THIRD YEAR:

Civil

Acalinovich, V. A.
Bromell, J. M.
Burvill, A .D.
Cheong, C. K.
Chwal, S. P.
Colledge, K. G.
de Rossi, A. F.
Giumelli, J. R.
Greay, B. K.
Grieve, R. B.
Henneveld, M.
Hough, D. G.
Lantzke, R. T.
Low, C. W.
McGuire, P. J.
Mauger, G. W.
Metcalf, L. L.
Mok, T. F.
Morrison, I. J.
Moyle, A. L.
Renton, R. J.
Sanderson, P. F.
Talianchich, M. M.
Tate, C. M.
Ventriss, H. B.

Electrical

Coronel, P. T.
Dillon, R. J.
Gatter, A. D.
Hebiton, L. J.
Lawrence, P. J.
Lewis, C. A.
Llorens, J. P.
Lorenti, J. D.
Milosz, G. R.
Myers, D. G.
O'Neill, M. R.
Perry, R. R.
Russell-Brown, R. A.
Seddon, L. N.
Stephenson, R. G.
Tung, S. L.
Zec, B. N.

Mechanical

Barrett, A. G.
Chia, C. H.
Coulter, D. N.
Loke, K. W.
Marsh, G. J.
Noonan, J. E.
Poynton, C. J.
Riley, T. W.
Scott, A. J. B.
Scott, L. J.
Struthers, J. L.
Sturman, J. J.
Yeap, S. H.

FOURTH YEAR:

Civil

Carlton, W. G.
Eastlake, P. J.
Fitzpatrick, M. D.
Frieze, P. A.
Gardner, D. E.
Gill, J. I.
Lee, R. W. G.
Male, R.
Martin, G. S.
Okis, J.
Ong, S. C.
Rozlapa, A.
Scott, P. E.
Smailes, R. J.
Sobjeko, K. S.
Sylwestrzak, D. A.
Tang, B. K.
Taylor, M. R.
Wall, J. A.
Walter, K. R.
Watson, G. R.

Electrical

Cantoni, A.
Chintakananda, A.
Della-Bosca, J. C.
Cygler, E.
Fuller, T. A.
Kings-Lynne, T. A.
Leivers, G.
Matassa, M.
McCarter, J. C.
O'Donoghue, R. M.
Richards, B. M.
Schoonens, P. C.
Teo Heng Lam
Winslade, R. J.
Yuen Wai Ling

Mechanical

Bocking, D. M.
Chang, K. F.
Gunn, R. I.
Hopwood, P. F.
McMath, T. W.
Mackinlay, D. B.
Ng, V. M. W.
Nicholson, P. G.
Oehlers, R. R.
Peh, K. C.
Reith, A. D.
Shier, F. W.
Ung, T. K.
Want, F. M. O.
Waring, R.
Watkins, R. G.

FIFTH YEAR:

Civil

Brooksbank, B.
Clarke, B. A.
Flintoff, W. T.
Harvey, D. R.
Jeffreys, J. D.
Kerr, P. G. H.
Kikiros, G. C.
Lim, J.
Mac, N. B.
Mercer, R. W.
Ng, K. W.
Pritchard, E. D.
Rushton, D.
Wallis, J. F.

Electrical

Abbey, G. J.
Chapman, G. C.
Coghlan, B. A.
Hambleton, D. V.
Kosina, C. J.
Marie, G. V.
McCarthy, D. P.
Nathan, C. J.
Slee, M. A.
Walters, K. J.
Yeoh Seng Hock

Mechanical

Allen, K. G.
Campbell, K.
Eastwood, T. R.
Halleen, M. D.
Jeffery, I.
Kirkham, L. O.
Macey, D.
Paterson, R. J.
Tang, D. L. P.
Thomas, A. D.

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